

REMARKS

I. GENERAL REMARKS

A. The Importance of the Presently Claimed Method and Product in the Toner Cartridge Remanufacturing Industry

Applicants emphasize that the presently amended claims are directed to an important aspect of re-manufacturing toner cartridges, specifically, disassembly of those cartridges through a very controlled, precise method that places the disassembled cartridge sections in a condition whereby they can be reassembled to the original equipment manufacturer's (OEM's) specification, i.e., "to achieve alignment and orientation necessary for proper operation". See specification at, for example, page 1, penultimate paragraph ("... a high degree of precision in manufacture is necessary for proper operation and good printed image quality."); the paragraph spanning pages 1-2, page 2, first sentence of the first full paragraph (the cartridge must be "... disassembled in such a manner that it may be reassembled with its components in the location, alignment and orientation necessary for proper operation"); and amended claim 7, lines 4-5.

It is emphasized that the present claims are not directed to the process of remanufacturing a toner cartridge, *per se*, and are not directed to the final, re-manufactured toner cartridge. To the contrary, the presently amended claims are directed solely to a method for disassembling a toner cartridge, and to a disassembled toner cartridge having novel and non-obvious characteristics that result from the described and claimed method.

It is also emphasized that re-assembly of the sections of a disassembled toner cartridge can be accomplished in any of several ways, for example, an ultrasonic welding technique as

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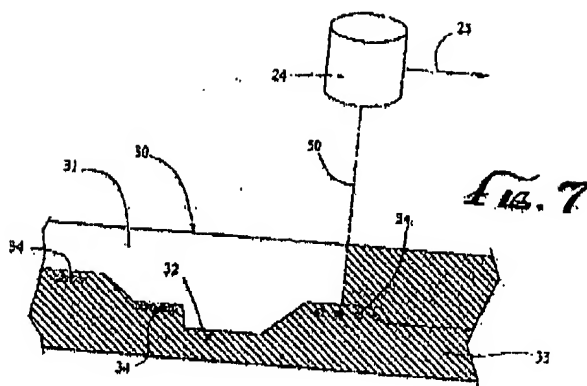
described in commonly owned U.S. Patent 6,577,830 ("the '830 patent"), a copy of which is provided in an Information Disclosure Statement by Applicant submitted concurrently herewith. As described in the specification of the '830 patent, conventional disassembly of an original toner cartridge is accomplished by separating the roller section from the hopper section with a rotating blade that cleaves the ultrasonic weld of the original toner cartridge. See, the '830 patent at 6:1-10. Thus, the method and disassembled toner cartridge of the present application and claims are directed to an improvement over the cleaving technique and resulting disassembled toner cartridge sections described in the '830 patent. As detailed in the present application at, for example, page 2, last paragraph, the problems with conventional methods of disassembly of a toner cartridge, and the resulting disassembled cartridge components include worker safety issues arising from dust and debris, human error resulting in variation in quality and manual disassembly being labor intensive and costly. The presently claimed method of disassembly, and the resulting disassembled cartridge minimize to eliminate these problems for several reasons.

First, due to the computer-controlled laser beam that precisely cuts through the toner cartridge at the seam where the roller section is joined to the hopper section of the original, spent toner cartridge, human error, and the associated labor costs are eliminated. With reference to Figure 7 of the application, a copy of which is reproduced below, it may be seen that the laser beam 50 is moved along each segment of this seam, also referred to as the interface line 32. See application, page 8, first full paragraph.

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It is noted that Figure 7 is a cross-sectional view of the Figure 6 top view taken along line 7-7.

Second, because the depth of the cut of the laser beam is precisely controlled as a function of laser beam power, thickness of the specific line segment of the joining surfaces and speed of travel of the laser over the cartridge surface, the cut can sever the hopper section from the toner section without damaging internal components, such as electrical conductors, that are positioned close to the joining surfaces. Also shown in Figure 7, above, are a series of such conductors 34. They are referred to in general terms as "functional elements 34" in the application, at page 6, the last paragraph. The laser beam cuts through the interface line segments, but in a precisely controlled fashion so that the resulting, disassembled cartridge

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sections retain these functional elements undamaged. That is an important limitation of the claim 7 disassembled toner cartridge.

For a given model of toner cartridge, the computer sets the path of cutting and this path is repeated precisely for each disassembled toner cartridge of that model. The course and speed of the cutting laser beam and the orientation of the toner cartridge are controlled by the computer so that damage to the relatively fragile components shown in Figure 7 and discussed above, such as electrical conductors or printed circuit boards passing through or very near the joining interface is avoided. As shown in Figure 7, it may be seen that several delicate conductors 34 are positioned a short distance under several line segments of the joining surfaces. As described in the application, and as required by claim these components remain, undamaged, in the disassemble toner cartridge.

The resulting disassembled roller section and disassembled hopper section of the original container thus have joining surfaces that are in a much better condition for remanufacture and/or reassembly that were the disassembled roller sections and hopper sections made through use of the conventional techniques.

B. Applicants' Express Denial That the Subject Matter of the Canceled and Pre-Amended Claims is Unpatentable, and Intention to Prosecute Such Claims in a Continuation Type Application

By the present amendment Applicants have canceled and amended some of the claims without prejudice to resubmit them and to prosecute them in a continuation type application. Applicant expressly denies that the subject matter of canceled claims 1-5 and 12-13, and pre-

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amended claims 6-11 and 14 is unpatentable. Applicants intend to resubmit these claims and prosecute them in a future, continuation type application. Applicants remain of the belief that under presently controlling law all of the claims as originally filed are patentable; however, due to the relatively long period that the present application has been in a prosecution status and the importance of the present method and disassembled toner cartridges in the field of the invention, Applicants' intention is to amend some of the claims in such a way as to remove any reasonable basis, even based on a broad interpretation of the claims, for concluding that the claimed subject matter is not patentable. Applicants' sole purpose in making the present cancellations and amendments is to place the pending claims in a condition that is clearly allowable. For this purpose and in consideration of "after final" condition of the present application, several narrowing amendments have been made, which amendments add elements and limitations not only not found in the prior art, but also taught away from in the prior art.

II. REPLY TO REJECTION OF CLAIMS 6 & 14 MADE UNDER 35 USC §103(a)

Claims 6 & 14 have been rejected under 35 USC §103(a) as being unpatentable over US Patent No. 6,223,010 to Araki (hereinafter referred to as "the '010 patent" or "Araki") in view of US Patent No. 6,609,044 to Basista et al (hereinafter referred to as "the '044 patent" or "Basista") and US Patent No. 4,549,066 to Piccioli et al (hereinafter referred to as "the '066 patent" or "Piccioli").

The detailed reasons for the rejection, and the detailed reasons in reply on why the rejection should be withdrawn with respect to the pre-amended claims are in the papers of record

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and will not be repeated here. With respect to the presently proposed claims 6 and 14, Applicants would point out and emphasize the following:

Araki excludes the cartridge itself as a component, *per se*, that is remanufactured. Rather, the cartridge components themselves are "melted and recycled as a resin material". See, Araki at 9:17-25. While the present application refers to the two constituent parts, or components of a toner cartridge as the "toner section" and the "hopper section", Araki refers to these parts as the toner frame 12a and the cleaning frame 12b. See, Araki at 9:21-25. Also, Araki refers to a toner cartridge as a "process cartridge".

Araki describes several embodiments, with each embodiment differing in the identity of the particular recyclable part(s) that are "easily taken out [of the disassembled cartridge] without being damaged" and differing in the specific technique for cutting the cartridge with a laser so that each such part can easily be removed. In Araki, the general approach to cutting the cartridge with a laser beam is to dispose between the laser beam and each pre-designated part that is, *per se*, to be recycled a "material layer difficult to cut by the laser". See, Araki Abstract, second sentence. The specific, easily removable and recycled parts are identified in the paragraph spanning columns 1-2 of Araki, and the detailed descriptions specifically identify Araki's techniques and materials used for disassembly of the cartridge and removal of each such part, respectively. In no Araki embodiment are the toner frame and hopper frame, *per se*, remanufactured. Rather, these frames are melted and recycled as a resin material.

With respect to presently amended independent claim 6, Araki has no disclosure and no teaching of at least the following claim elements and limitations:

- ☐ Determining the thickness of each interface line segment;
- ☐ Removably retaining the toner cartridge in a gimbal;

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- Providing a moveably adjustable light path;
- Controlling the laser, the gimbal and the light path by a computer program; and,
- Causing the laser beam to trace a path along each line segment at a speed determined by correlating the thickness of each interface line segment with the laser beam power.

The secondary reference cited and relied on in the Office Action, Basista '044 not only does not have any disclosure of the above claim elements, it is directed and limited to cutting a single sheet of metal. See, Basista Abstract, lines 1-3; and [1:10-15; 3: 5-10]. There is no disclosure of determining the speed of a laser beam by correlating the thickness of each interface line segment with the laser beam power. Thus, no matter how reasonably broad claim 6 is interpreted, there is no reasonable basis to conclude that using Basista's computer cutting program for a sheet of metal could be a credible teaching for modifying the Araki system and methods to yield the presently claimed inventions.

The third reference cited and relied on in the Office Action, Piccioli '066, is limited to the original production of a resin product, and the removal of excess product. It has no disclosure of cutting into sections any container having interfacing thermoplastic joining surfaces. The Piccioli containers don't even have interface joining sections. Also, there is no computer control, much less computer control of speed of travel of a laser beam by a method of correlating thickness of each interface line segment as required by claim 6. Thus, Piccioli contributes no teaching relevant to the issue of obviousness presently under consideration.

For all of the above reasons it is believed that the rejection to claims 6 and 14 should be withdrawn.

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III. REPLY TO REJECTION OF CLAIMS 7 & 9-11 MADE UNDER 35 USC §103(a)

Claims 7 and 9-11 have been rejected under 35 USC §103(a) as being unpatentable over Araki '010 in view of US Patent No. 6,864,294 to Koike et al (hereinafter referred to as "the '294 patent", or "Koike").

By the present amendment Applicant has cancelled claims 12-13, and amended independent claim 7.

Claim 7 is directed to a disassembled toner cartridge that has characteristics or features that result from the precise method described in the application, and set forth in method claim 6, discussed above. In this regard there are several elements and limitations in presently amended claim 7 that are not found, expressly or by implication in either of the cited references, and there is no teaching to combine the cited references in a way that would yield the claimed disassembled cartridge.

Of importance to the issue of obviousness is the claim 7 requirement of a disassembled toner cartridge made from an original toner cartridge and that is suitable to be remanufactured or reassembled with elements required for proper function of the original toner cartridge remaining undamaged in the disassembled toner cartridge. As discussed in detail above, the Araki process takes out certain elements required for proper function of the toner cartridges and then melts the cartridges and recycles them as a resin material. See, Araki '010 at 9:16-25. As such, Araki does not disclose, make or in any manner teach a disassembled toner cartridge with these certain elements required for proper functioning to remain undamaged in the disassembled toner cartridge.

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The secondary reference cited and relied on in the Office Action, Koike '294, pulverizes the cartridge. In Koike there is no reuse of the cartridge, and there is no disassembled cartridge that includes the required elements to remain in the cartridge undamaged.

Furthermore, in Koike '294 there is no cutting through the joining surfaces of containers. Rather, the cutting is made in relation to the location of components inside of the containers that can re-used. Thus, the location of Koike's cutting is completely independent of and unrelated to the location of the joining surfaces of the container.

For all of the above reasons it is requested that the rejection to claims 7-11 be withdrawn.

IV. AUTHORIZATION TO CHARGE FEES

If any fees are due in regard to the present reply, authorization is hereby granted to charge Deposit Account 50-3725.

V. CONCLUSION

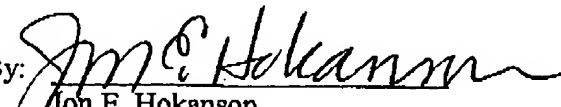
For all of the above reasons it is requested that the rejections be withdrawn and that a Notice of Allowance of all pending claims be forthcoming.

Respectfully submitted,

LEWIS BRISBOIS BISGAARD & SMITH LLP

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By:


Jon E. Hokanson
Reg. No. 30,069

LEWIS BRISBOIS BISGAARD & SMITH LLP
221 N. Figueroa Street, Suite 1200
Los Angeles, California 90077
(213) 250-1800